

June, Oct. lacking

ESTABLISHED 1831.

THE

American Railroad Journal

A Monthly Magazine and Review.

Vol. LIX.

APRIL, 1885—MARCH, 1886.

Subscription Price, \$3.00 per Year.

PUBLISHED AT

No. 323 PEARL-STREET,
NEW YORK.

American Railroad Journal.

TABLE OF CONTENTS.

Volume LIX.

CONTRIBUTIONS.

(Written for the American Railroad Journal.)

High-Speed Freight Transportation—By S. H. Finch.....	1	Herrick.....	132	Partridge.....	262
Passenger-Train Conductors—By a Superintendent.....	2	American and English Locomotives—By a Master Mechanic.....	133	Railway Medical Service—By S. S. Herrick, M. D. Second Series.—The United States. III. The Missouri Pacific Railway.....	264
Lubricating with Grease—By E. F. Dietrichs.....	4	Utility in Street-Car Painting—By a Car-Painter (Street-Railway Department).....	145	The Future of the Cable System—By A. J. Moxham (Street-Railway Department).....	277
The Question of Rails—By Augustine W. Wright (Street-Railway Department).....	16	Accidents from Broken Rails and Wheels—By Wm. S. Huntington.....	163	Accidents from Misplaced Switches and Draw-Bridges—By Wm. S. Huntington.....	295
A Chapter on Railway Economy—By Wm. S. Huntington.....	33	"Two into One—No Times"—By Edgar C. Dayton.....	164	When Should a Car go to the Paint-Shop?—By a Master Car-Builder.....	296
The Question of Speed—By Lawrence T. Goff.....	34	Southern Railways During the Rebellion—By William S. Vest.....	165	Railway Medical Service—By S. S. Herrick, M. D. Second Series.—The United States. IV. The Denver and Rio Grande Railway.....	297
An Instructive Episode in Bridge-Building—By Thomas M. Griffith, M. E.....	35	Official Recognition of Street-Railway Improvements—By F. Martin Gayler (Street-Railway Department).....	178	Publicity of Street-Railway Rules—By M. C. Ellis (Street-Railway Department).....	309
The Problem of Rapid Transit—By Edward E. R. Tratman (Street Railway Department).....	48	Railway Medical Service—By S. S. Herrick, M. D. Second Series. The United States. I. The Pacific Railways.....	195	The Importance of Proper Lubrication on Railways—By E. F. Dietrichs.....	327
Railways as Military Factors—By William S. Vest.....	65	Iron Cars—By a Master Car-Builder.....	169	Railway Medical Service—By S. S. Herrick, M. D. Second Series.—The United States. V. Railways East of the Mississippi River.....	328
Railway Sanitation and Cholera—By S. S. Herrick, M. D., Secretary State Board of Health of Louisiana.....	66	Lubricating on Railways—By E. F. Dietrichs.....	197	The Fitting Up of Locomotive Links—By Frank C. Smith.....	329
Promotion in Railway Service—By a Superintendent.....	67	Car-Starters—By Augustine W. Wright (Street-Railway Department).....	210	Dangers of the Cable System—By W. W. Hanscom, M. E. (Street-Railway Department).....	331
The Upholstering and Interior Decoration of Street-Cars—By a Car-Builder (Street-Railway Department).....	81	Curious Cars for Freight-Traffic—By F. B. Brock.....	229	Increase of Speed in Passenger-Trains—By William S. Vest.....	341
Accidents from Spreading of Rails—By Wm. S. Huntington.....	97	Accidents at Overhead Bridges, Highway-Crossings and Permanent Way—By Wm. S. Huntington.....	230	Railway Medical Service—By S. S. Herrick, M. D. Second Series.—The United States. II. The Northern Pacific and the Atlantic and Pacific Railways.....	342
• A Plea for Lighter Rolling-Stock—By Chemin de Fer.....	98	Railway Medical Service—By S. S. Herrick, M. D. Second Series.—The United States. III. The Baltimore and Ohio Railroad Company.....	368		
The Other Side of the Promotion Question—By G. C. W.....	99	The "Bobtail" Car—By a Retired Official (Street-Railway Department).....	244	Railway Lumber Yards—By W. E. Partidge.....	370
The Cable System—By W. W. Hanscom, M. E. (Street-Railway Department).....	112	Consolidated, Mogul and Eight-Wheel Freight-Engines—By Frank C. Smith.....	261	Uniforming Conductors and Drivers—By F. Martin Gayler (Street-Railway Department).....	381
Fuel Economy—By Frank C. Smith.....	131	English and American Railways—By W. E. Hanscom, M. E. (Street-Railway Department).....	230		
Free-Trade in Railway Tickets—By S. S. Volume 59.....	111				

EDITORIALS.

Volume 59.....	12	A Bad Year for Railways.....	142
Railway Taxation in New Jersey.....	13	Railway Journalism.....	143
Railway Inventions.....	13	Editorial Notes.....	143
Editorial Notes.....	14	Is It to be the Street-Railway of the Future? (Street-Railway Department).....	145
The Problem of Cable Traction (Street-Railway Department).....	15	The Parallel Road.....	174
The St. Louis Time Convention.....	44	The Car-Coupling Test.....	175
Railways as Carriers of Contagion.....	45	Terminal Expenses at New York.....	175
Editorial Notes.....	46	Editorial Notes.....	176
Street-Railway Monopoly (Street-Railway Department).....	47	Convention of the American Street-Railway Association (Street-Railway Department).....	177
Speculative Railway Construction.....	76	Railways and the Timber Question.....	206
Enough!.....	77	An Old-Fashioned Remedy.....	207
The Field of the Railway Inventor.....	77	Editorial Notes.....	208
Editorial Notes.....	78	More State Associations Needed (Street-Railway Department).....	210
A Unity of Interest (Street-Railway Department).....	80	Railway Receiverships.....	240
The Ethics of Strikes.....	108	The Philosophy of Accidents.....	241
The Recent Conventions.....	109	Editorial Notes.....	242
Editorial Notes.....	110	The Street-Railway Convention (Street-Railway Department).....	242
Street-Railway Invention (Street-Railway Department).....	111	Both Sides of the Staten Island Bridge	

MISCELLANEOUS AND SELECTED.

The Locomotive of American Inventors.....	6	Durability of Steel Rails.....	43
Southern Railway Legislation.....	7	Electric Lights on Cars in Germany.....	43
The Advantages of Railway Pools.....	8	Bridge Lore.....	68
From America to Russia by Rail.....	9	Improvements in Traveling.....	70
Railway Sanitation.....	10	The St. Louis Time Convention. Recommendations of the Committee.....	71
Belgian Railway Progress.....	10	A Railway Museum.....	73
Looking After New Cars.....	10	Must Have American Locomotives.....	73
Cost of Operating Early Locomotives.....	11	The First Railway Ride.....	74
Railways of the World.....	11	When Locomotive Engineers are Tempted to Drink.....	74
The Pike's Peak Railway.....	11	English and American Railway Speed.....	74
A Valuable Train.....	11	Low Railway Bridges.....	74
The Production and Consumption of Rails.....	38	Railways for China.....	75
The Engagement and Management of Railway Employés.....	38	An Old Locomotive.....	75
A Substitute for Pools.....	40	French State Railways.....	75
Heavier Rails Needed.....	41	South Australian Railways.....	75
Military Utility of the Railways of India.....	41	Legal Requirements Upon the Mechanical Department of Railways—By Willard A. Smith. A Paper read before the American Railway Master Mechanics' Association. 100	75
Railways Superseding Canals.....	42	Car-Inspection.....	102
Master Car-Builders Association.....	42	Railways in Belgium.....	104
Privileges of French Railway Employés.....	42		
Railway Sanitation in New Jersey.....	42		
Railway Wages in Missouri.....	43		
Common-Sense Ventilation.....	43		

Contributions to a National Museum Illustrating Steam-Transportation.....	104
English and American Railway Speed.....	105
Proposed Tunnel from the Canadian Mail Line to Prince Edward's Island.....	105
Another Trans-Alpine Railway.....	105
Crude Petroleum as Fuel.....	106
New Prussian Railways.....	106
The End of the Suakim-Berber Railway.....	106
Locomotive Works in the United States.....	106
The Fate of an English Car in America.....	106
Cross-Ties on French Railways.....	106
Death of Another "Oldest Engineer,"	106
Tie-Spacing.....	107
Surface Crossing in England.....	107
Railways in Palestine.....	107
A New Railway in Russia.....	107
Licensing Engineers and Conductors.....	107
The Largest Locomotive.....	107
Rails and Track Labor.....	134
Genesis of a Car-Wheel.....	136
Durability of Cross-Tie Timber.....	137
Painting Ironwork.....	137

MISCELLANEOUS AND SELECTED.—(Continued).

Car-Coupling Tests by the Master Car-Builders' Association.....	138
A Ship-Railway in Nova Scotia.....	138
Railway Building in the West.....	138
Railways in India.....	139
The Convention of the Master Car-Painters' Association.....	139
The First Railway in America.....	139
Telegraphy in the United States.....	139
The English Railway Commission.....	140
A Great Railway Bridge in Australia.....	140
The Smallest Locomotive.....	140
A Singular "Cut.".....	140
Freight-Rates in Mexico.....	140
Railways in Chili.....	140
The Cost of Stopping a Train.....	140
Keely Surpassed.....	140
Specific Gravity of American Woods.....	141
A Railway in China.....	141
Railways in Indiana.....	142
The Electric Light on Railway-Cars.....	142
The Longest Draw-Span in the World.....	142
How New Railways are Inaugurated in England.....	166
Railway Standards.....	169
Misleading Titles of Railways.....	170
Railways in Central Asia.....	170
Origin of Petroleum.....	171
Canadian Branch Lines.....	171
Pacific Railroad Earnings.....	171
Valuation of the Philadelphia and Reading's New Jersey Property.....	171
Coke as Locomotive Fuel.....	171
Strong and Weak Woods.....	171
A Novelty in Railways.....	171
The First Railway in San Domingo.....	171
The Great Canals of the World.....	172
Taking up Tickets on Sleeping-Cars.....	172
Old Locomotives.....	172
A Chat About Car-Wheels.....	172
Time on Lake Constance.....	172
Railway and Steamship Speed.....	172
A Railway Subsidy in Colombia.....	173
A Telegraphic Railway.....	173
The Car-Coupling Tests at Buffalo.....	173
America Claims the Honor (communicated). The Interior Finish of Passenger-Cars—By T. F. Page, A Paper read before the Master Car-Painters' Association.....	197
The International Railway Congress.....	200
Philadelphia's Railway Facilities.....	201
English Railways in 1884.....	202
Railway Enterprise in China.....	202
Export of American Locomotives.....	203
A Wonderful Peruvian Railway.....	203
"Railroad" and "Railway.".....	204
Returns to Railway Capital in Germany.....	204
The American Coal Fields.....	204
The Michigan Car-Coupling Law.....	204
Track-Walkers in Russia.....	205
Improvements in Railway-Stations.....	205
Standard Wheel-Tread and Flange.....	205
The Cracking of Paint and Varnish on Cars—By A. P. Sweet, A Paper read before the Master Car-Painters' Association.....	233
The Railways of Japan.....	234
Can Railway Companies Afford to Build their Locomotives?.....	235
Car-Seats.....	236
Car-Coupling Tests in Michigan.....	237
American Inventions upon the Locomotive.....	237
Changes in Note of Bell or Whistle.....	238
The Storm King Bridge.....	238
The Era of New Fuels.....	238
Competitive Tests of Automatic Freight-Car Brakes.....	238
Prizes for Railway Improvements.....	239
Railways in Alabama.....	239
A Strategic Railway.....	239
Piece Work in the Railway Paint-Shop—By F. S. Ball, A Paper read before the Master Car-Painters' Association.....	265
Successful Railway Management.....	266
Railway Accidents in Great Britain in 1884.....	267
The Steel-Rail Trade.....	268
Discussions at the Master Mechanics' Convention.....	269
Railway Taxation in New Jersey.....	269
French Railway Benefit Associations.....	269
The South American Transcontinental Line.....	270
An Early Locomotive.....	270
The Master Car-Builders' Car-Coupling Tests.....	270
The Keely Motor Humbug.....	270
How to Tell the Speed of a Train.....	271
The Coventry Engine.....	271
A Problem in Drilling Cars on a "V" Switch.....	271
Fast Passenger-Locomotives—By T. Everett Austin, A Paper read before the Engineers' Club of Philadelphia.....	298
Rival Land and Water Transportation Routes.....	300
Comparative Cost of Operating American and English Railways.....	301
State Ownership of Railways a Failure.....	302
The Waste of Whistling.....	309
A Locomotive's Surprising Record.....	309
A New Adaptation of Electricity.....	309
High-Speed Engines for English Roads.....	304
The Philadelphia and Reading Road.....	304
Railways in Iowa.....	304
Dimensions of Cars Used on the Pacific Roads.....	304
Solutions to the Problem in Car-Drilling.....	305
The Outside Painting and Varnishing of Passenger-Cars—By William Davis, A Paper read before the Master Car-Painters' Association.....	330
The Question of Brakes.....	331
American Locomotives of 1885.....	332
The Relief Department of the Pennsylvania Railroad.....	333
Inquiries About Driver-Brakes.....	334
Railway Progress in China.....	334
Railways Across the Boundary.....	335
Requirements of an Automatic Electric Block-Signal System.....	335
Railway Accidents in Russia.....	335
Car-Axle Tests on the Pennsylvania.....	336
Automatic Freight-Car Tests.....	336
The Nuisance of Whistling.....	336
Report of the New York Railroad Commissioners for 1885.....	336
An Anecdote of General McClellan's Railway Days.....	337
Poppies for Railway Road-Beds.....	337
The Proposed Ship Canal Across Ireland.....	337
Another Problem in Switching and Car-Drilling.....	337
Smoke-Consuming Devices for Locomotives—By J. N. Lauder, A Paper read before the American Forestry Congress.....	371
Rail Production and Consumption.....	373
The Most Northerly Railway in the World.....	374
Economy of Fuel.....	374
Metallic Railway-Ties.....	374
Railway Mileage in Canada.....	374
Joining the Volga and the Don.....	375
A New Rule for Running Railway Curves.....	375
French Opinion of American Locomotives.....	375
The Introduction of Railways.....	376
An Interesting Relic.....	376
Economy of Feed-Water Heaters.....	376
Locomotives in Italy.....	376
A Once Famous Car.....	376
Locomotive Running Average.....	377
Solutions to the Second Problem in Car-Drilling.....	377

STREET-RAILWAYS.

The Problem of Cable Traction (editorial).....	15
The Question of Rails—By Augustine W. Wright.....	16
The Liability of Street-Railway Companies for Negligence—By O. S. Brumback, A Paper read before the Ohio State Tramway Association.....	17
An Elevated Cable Road in Brooklyn.....	18
An Electric Railway in Baltimore.....	18
Coal Consumption by the Brooklyn Bridge Railway.....	18
The Louisville City Railway Company.....	18
An Oil-Burning Street-Car Motor.....	18
Street-Railway Notes.....	58
Street-Railway Monopoly (editorial).....	47
The Problem of Rapid Transit—By Edward E. R. Tratman.....	48
The Liability of Street-Railway Companies for Negligence—By O. S. Brumback, A Paper read before the Ohio State Tramway Association (continued).....	50
Electric Railways in San Francisco.....	50
The St. Louis Cable Road.....	51
Steam Street-Car Motors in London.....	51
Street-Railway Construction in Cincinnati.....	51
Street-Railways in Birmingham, Ala.....	51
The Brooklyn Bridge Passenger-Railway.....	51
Street-Railway Notes.....	51
A Unity of Interests (editorial).....	80
The Upholstering and Interior Decoration of Street-Cars—By a Car-Builder.....	81
The Liability of Street-Railway Companies for Negligence—By O. S. Brumback, A Paper read before the Ohio State Tramway Association (concluded).....	81
The American Street-Railway Mutual Insurance Company.....	83
The Broadway Surface Road.....	84
Electric Elevated Railway in Chicago.....	84
The New Road in St. Louis.....	84
Electric Cars for Street-Railways.....	84
A Legal Decision.....	85
The Proposed Railway on Mail Street.....	85
A New Cross-Town Road in New York City.....	85
An Improved Rail for Street-Railways.....	85
The Only International Street-Railway.....	85
Street-Railway Notes.....	85
Street-Railway Invention (editorial).....	111
The Cable System—By W. W. Hanscom, M. E. 112	112
Street-Car Motors.....	113
Failure of the Philadelphia Cable Road.....	113
The Broadway Surface Road.....	113
Trying a New Compressed-Air Car.....	114
Electric Railway Progress.....	114
A Fireless Street-Car Motor.....	114
An Electric Railway Test.....	114
The "Grip" Applied to Electric Railways.....	114
Popularity of Steam Tramways in London.....	114
Street-Railway Notes.....	114
Is It to be the Street-Railway of the Future? (editorial).....	143
Utility in Street-Car Painting—By a Car-Painter.....	145
The Bentley-Knight Electric Railway.....	146
Street-Railways in Buenos Ayres.....	148
An Elevated Railway in Paris.....	148
The Brooklyn and Long Island Cable Road.....	148
Novel Elevated Railway.....	148
Street-Railway Notes.....	148
Convention of the American Street-Railway Association (editorial).....	177
Official Recognition of Street-Railway Improvements—By F. Martin Gayler.....	178
Taxation of Street-Railway Property—By A. D. Rogers, A Paper read before the Ohio State Tramway Association.....	179
Third Annual Meeting of the Street-Railway Association of the State of New York.....	180
The Approaching Fourth Annual Meeting of the American Street-Railway Association.....	180
Fourth Annual Meeting of the Ohio State Tramway Association.....	180
The American Street-Railway Mutual Insurance Company.....	180
The Original Cable Road Patent.....	181
The Daft Electric System.....	181
Repairing Pavements.....	181
The St. Louis Cable Road.....	181
Steam-Motors Approved (communicated).....	181
Street-Railway Notes.....	181
More State Associations Needed (editorial).....	210
Car-Starters—By Augustine W. Wright.....	210
Street-Railway Legislation—By A. J. Malone, A Paper read before the Ohio State Tramway Association.....	211
The St. Louis Meeting of the American Street-Railway Association.....	213
The Ohio State Tramway Association.....	213
The New Pullman Street-Cars on the Broadway Surface Road.....	213
A Legal Contest Regarding Fare-Registers.....	213
The Montreal Cable Railway.....	214
Power Required on the New York Elevated Railways.....	214
Women as Conductors.....	214
Street-Railway Notes.....	214
The Street-Railway Convention (editorial).....	244
The "Bobtail" Car—By a Retired Official.....	244
The Fourth Annual Meeting of the American Street-Railway Association.....	244
A Heavy Street-Railway Mortgage.....	245
A Street-Railway in Yonkers.....	247
Street-Railways in the Russian Capital.....	247
A Singular Title.....	247
A New Form Car-Wheel.....	247
Street-Railway Notes.....	247
Street-Railway Construction in New York City (editorial).....	276
The Future of the Cable System—By A. J. Moham.....	277
Rules Governing Conductors and Drivers. Report of the Special Committee to the American Street-Railway Association.....	278
Fourth Annual Meeting of the Ohio State Tramway Association.....	279
The Philadelphia Electric Railway.....	280
A Cable Road in Binghamton, N. Y.....	280
A Street-Railway in Newport, R. I.....	280
The Brooklyn Elevated Railway.....	280
A London Tramway.....	280
Street-Railway Notes.....	280
The Question of Heating (editorial).....	309
Publicity of Street-Railway Rules—By M. C. Ellis.....	309
Track Repairs. Report of the Special Committee to the American Street-Railway Association.....	310
Compressed-Air Motors for Street-Railways.....	313
New York Street-Railway Statistics.....	313
Street-Cars in Paris.....	314
Street-Railway Notes.....	314
Street-Railway Franchises (editorial).....	314
Dangers of the Cable System—By W. W. Hanscom, M. E.	341

STREET-RAILWAYS.—(Continued).

Diseases Common to Car-Horses, and Their Treatment. Report of the Special Committee to the American Street-Railway Association.....	342	The Fare-Register Suit.....	348
Brooklyn Street-Railways in 1885.....	348	Street-Railway Notes.....	348
The Binghamton Cable Railway.....	348	The Recent Strike (editorial).....	381
An Electric Tram-Car in Berlin.....	348	Uniforming Conductors and Drivers—By F. Martin Gayler.....	381
		Diseases Common to Car-Horses and Their Treatment. Report of the Special Committee to the American Street-Railway Association (concluded).....	382
		The Electric Elevated Railway in St. Louis.....	386
		A New Use for Street-Railways.....	386
		Inspecting Cable Roads.....	386
		Street-Railway Notes.....	386

NEW INVENTIONS.

Colby's Sleeping Car.....	19	Wilder's Safety-Valve.....	150
Phelps' Induction Telegraph System.....	20	Miller's Nut-Lock.....	152
Miller's Railway Rail-Joint.....	21	Parker's Draw-Bar and Coupling.....	152
Pearson's Indicator-Lock.....	22	Haskell & Fleming's Anti-Pressure Valve.....	153
Sisum's Cable-Railway Grip.....	23	Dougherty & Bryant's Metallic Cross-Tie for Elevated and Surface Railways.....	154
Leech's Car-Coupling.....	25	Wells' Oiler.....	155
McKinnis' Steam-Valve.....	26	Purviance's Automatic Railway-Switch.....	156
Andrew's Car-Coupling.....	27	Gibson's Improved Construction of Railway-Tracks.....	157
Armstrong's Automatic Car-Brake.....	28	Wheeler's Machine for Forming Car-Followers.....	158
Vaughan's Car-Coupling.....	29	Cannan's Car-Coupling.....	159
Loveless' Spark-Arrester and Consumer.....	32	Handlan's Locomotive Head-Light.....	182
DeLanoy's Mail-Bag Catcher and Deliverer.....	34	Clark's Rail-Support, or Tie.....	182
McCormick's Locomotive Head-Light.....	35	Stitzel's Stuffing-Box.....	183
Dunn's Car-Coupling.....	37	Elli's Railway Bumping-Post.....	185
Schuhmann's Valve for Engines.....	38	Sypher's Rotary Steam-Valve.....	185
Barrett's Lifting-Jack.....	39	McGrew's Railway Ditching-Machine.....	186
Craig's Boiler-Cleaner.....	60	Roberts' Railway Water-Tank.....	188
Maltby's Fare-Box Indicator.....	60	Gould's Combined Railway Track-Support and Traction-Cable and Electric-Conductor's Conduits.....	189
An Improved Train Signal.....	61	Mattoon's Fare-Box Register.....	190
Copper Sleeves for Valve-Stems (communicated).....	61	Morton's Nut-Lock.....	191
A Test for Lubricating Oils.....	61	Gerhardt's Car-Truck.....	215
Rote's Automatic Brake.....	86	Stewart's Street-Car.....	216
Barton & Davis' Improvement in Steam-Engines.....	87	Jones' Rail-Joint.....	217
Hadley's Extension Car-Step.....	90	Glynn's Railway-Tie.....	218
Currie's Car-Brake.....	91	Worthen's Oil-Can.....	219
Rothrock's Feed-Water Heater for Locomotives.....	91	Sparling & Fitch's Car-Coupling.....	220
Meyer's Seal-Lock for Car-Doors.....	92	Kubler's Permutation Padlock.....	221
An Ingenious Car-Door Closing Device.....	93	Over's Nut-Guard.....	222
Sax's Car-Wheel.....	115	Troy's Nut-Lock.....	222
Haskell's Time-Recording Apparatus.....	116	Waite's Packing for Axle-Boxes.....	223
Zimmerman's Car-Coupling.....	118	Herschell's Locomotive-Spring.....	224
Pullman's Electric Bell-Cord for Railway-Trains.....	119	Haigh's Automatic Boiler-Feeder.....	225
Stripe's Indicator-Lock.....	120	Whipple's Railway-Tie and Rail-Fastening.....	248
Scott's Car-Axle Box.....	121	Barclay's Lubricator.....	249
Bailey & Alexander's Water-Gage.....	122	Mershon's Valve-Oiler.....	250
Wine's Car-Coupling.....	123	Fischer's Car-Axle Box.....	251
Willson's Door for Grain-Cars.....	124	Wolcott's Dumping-Car and Car-Dump.....	251
Varian's Adjustable Coal-Screens.....	125	Davis' Electro-Magnet for Signals.....	254
A New Wood Preservative.....	126	Bold's Lubricator.....	256
A Scale of Hardness for Metals.....	126	Gidley's Endless-Chain Railway Curve.....	256
Provencal's Car-Coupling.....	149	Hascy's Rail-Joint.....	257
Cowden's Gearing for Reverse-Shafts.....	150	Adams' Car-Brake.....	281
		Lowrie's Switching-Wheel for Street-Cars.....	282
		Cuneo's Car-Coupling.....	283
		Tool's Railway Semaphore and Telegraph Operator's Train-Order Signal.....	284
		Long's Lubricator.....	285
		Ander's Cable-Grip.....	286
		Meigs' Car-Coupling.....	286
		Bowman's Car-Strap.....	287
		Davies' System of Railway Rail-Fastening.....	288
		Sprague's Railway-Station Signal.....	290
		Riggin & Gummerson's Railway-Gate.....	291
		Skinner's Link-and-Pin Coupler and Uncoupler.....	315
		Hayes' Nut-Lock.....	316
		Raddin's Car-Coupling.....	317
		Andrews' Long-Distance Lubricator.....	317
		Whitmore's Car-Coupling.....	318
		Wilkinson's Automatic Switch-Signals.....	319
		Pflaum's Metallic Piston-Packings.....	321
		Buckman's Car-Coupling.....	322
		Gouilloud & Page's Journal-Bearing.....	323
		Giles' Car-Coupling.....	349
		McFyeire's Piston-Packings.....	350
		Bare's Nut-Lock.....	350
		Kirby's Canopy for Railway-Car Lamps.....	351
		Cornell's Electric Time-Signal for Railways.....	352
		Carpenters' Furnace for Steam-Boilers.....	353
		Lane & Thorp's Car-Starter.....	355
		Vogel's Electric-Alarm for Locomotives.....	355
		Ursbruck's Nut-Lock.....	357
		Chamberlain's Car-Coupling.....	358
		Brown's Roll for Reducing Old Rails.....	359
		Stetzer's Spring Piston-Packings.....	361
		Hanley's Stock-Releasing Device.....	362
		Taylor's Journal-Box.....	363
		Vogel's Railway Telegraph.....	387
		McAllister's Car-Coupling.....	388
		Hunter's Street-Car Heater.....	388
		De Mier's Electric Alarm-Signal for Railway-Cars.....	390
		Campbell's Snow-Sweeper.....	391
		Taggart's Car-Coupling.....	394
		Pitcher's Spark-Arrester.....	395
		Ries' Automatic Alarm, Signaling and Safety Devices for Railways.....	396
		Newton's Steam-Trap.....	399